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§ 42 . **Note on Populus balsamifera,** L. var. **candicans,** Gray—At the roadside, about two miles north of the city of Newburgh, on the Hudson, there is a remarkable specimen of the "Balm of Gilead" tree, which from its size, and probably great age, is deserving of being put on record in a botanical journal, and the more so, from the fact that the aged giant has been giving evidence for the last few years that its days are nearly numbered. In regard to this interesting tree (from whence a small collection of houses in the vicinity has received the name of Balmville) Mr. Ruttenber, in his History of the Town of Newburgh, gives the following facts: "Mr. Gilbert Williams, now (1875) in his 80th year, and who became a resident in its vicinity in 1808, relates that when in Nova Scotia (where he resided for nine years prior to 1832) he became acquainted with a John Cosman, who was an apprentice to Wm. Bloomer before the Revolution, who stated that while he was an apprentice he had shod horses under it many a time, and that it was a large tree then. Mr. Williams measured the tree in 1832, and its circumference (two feet from the ground) was 15 feet 2 inches. He measured it again in 1868, and found it to be 19 feet 5 inches, showing its growth to have been 4 feet and 3 inches in thirty-six years. His own recollection of the tree, added to Cosman's, carries it back at least a hundred years." There are, as might be expected of so notable an object, several traditions as to the origin of this tree. One is that the slip from which it grew was brought from New Jersey by a family of early settlers. Mr. Isaac Demott, an aged gentleman, son of one of the first settlers of the locality, and who would be likely to know more about it than any one else, told Mr. Eager, the historian of Orange County, in 1846, that "the tree grew there naturally—that when it had grown large enough for a rail, he cut it down to use it for that purpose—that it sprouted from the root, and he let it grow."

The "Balm of Gilead" is said by Muhlenberg to grow in New York, but Dr. Torrey, in the Flora of the State, says: "I have not found it indigenous within our limits." W. R. G.

The typical form of *P. balsamifera* occurs on the right shore of the Sacondaga River at Hope Centre, Hamilton Co., N. Y. I saw no large trees there, but there are quite a number of small size in the vicinity of a cabin which has been long unoccupied. They seemed to me to have sprung up spontaneously, perhaps suckers from larger trees that had been cut down to make the clearing. W. H. L.

§ 43. **Botanical News.**—In Trimen's *Journal of Botany* for March, Mr. J. G. Baker begins a Synopsis which is designed to embrace descriptions of all the known species of *Isoetes*. In the continuation of his paper "On the Botany of the British Polar Expedition of 1875–6," Mr. Henry C. Hart notes the fact that some plants seem unable to flower in Discovery Bay. Thus *Epilobium latifolium* and *Polygonum viviparum* do not nearly arrive at perfection; *Arenaria Groenlandica*, *Arnica montana*, *Saxifraga rivularis*, and *Cardamine pratensis* make no effort to flower, while others, such as *Saxifraga cernua*, *S. nivalis*, *S. tricuspidata*, and *Festuca brevifolia* blossom only very sparingly. Again, the anthers of others, such as *Alopecurus alpinus*, and *Stellaria longipes* rarely open so as to shed their pollen, as they do abundantly in lower latitudes. These instances go to confirm the author's observation that Arctic plants are independent of reproduction by seed. Butterflies and other insects, whose office it is to fertilize flowers, occur here ; but this duty is no longer performed by them, and they remain merely as the relic of a former more extensive Arctic fauna. The other papers in this number are "Notes on the Flora of Northamptonshire," by G. C. Druce, and "On the Distribution of Hypnum salebrosum in Britain," by E. M. Holmes.

Catalogue of the Pacific Coast Fungi, by H. W. Harkness, M. D., and J. P. Moore, A.M. This Catalogue, issued under the auspices of the California Academy of Science, is the first of the kind ever published on the Western Coast, and contains the names and stations of such fungi as have been thus far found and identified by the authors in a district embraced within quite extended limits—from Mt. Shasta on the North to Fort Yuma on the South, and from the seashore to the eastern limits of the Sierras. The authors say that "in the cave fungi, or fungi of our mines, comparatively little has been done. Want of literature on this subject has been a great hindrance to us in this work. The single cave fungus placed in the addenda is so striking that we have deemed it worthy of an insertion." The remarkable fungus here referred to, described by Mr. Moore under the name of *Agaricus tridens*, was found in a Nevada mine at a depth of 400 feet below the surface. The stem was 3 ft. and 4 inches long, and hung suspended from a piece of timber, to which it was attached by a disk several inches in diameter. At 9 inches from the point of attachment the stem divided into three branches, which again united at just 9 inches from the point of division, and immediately sent off two lateral branches. The main stem continued downward, enlarging to the diameter of nearly 3 inches. At the point of attachment of the cap or pileus short branches, resembling the young antlers of a stag, projected. Two of them, more vigorous than the rest, extended downward, the larger of the two dividing into three branches, thus terminating the whole in a perfect trident. This is one of those curious monstrosities of some fungus which are very apt to occur in such situations as the one described, and which have often been noticed in Europe. Certain conditions of heat and moisture, combined with the absence of light, seem to conspire to cause an exuberance of growth of the hymenophore and its support at the expense of the hymenium and its fruit. Were the specimen under consideration a normal one, its decurrent, notched gills, its coriaceous texture, and its woody habitat would undoubtedly place it, not in the genus *Agaricus*, but in *Lentinus*. The majority of the fungi embraced in the list belong to the same genera and species as those found in other portions of the United States ; although, as might have been expected, a large number of new species have been detected. The most remarkable discoveries, it seems to us, are those found recorded in the order Trichogastres, where we notice the names of *Podaxon Loandensis*, *Lycoperdon asperrimum*, *L. bicolor*, *L. caespitosum*, and *L. radicatum*, all of which were originally described by Wellwitsch and Currey (Linn. Trans. xxvi) from the southwest coast of Africa. As a whole, the catalogue before us represents the results of a vast deal of labor on the part of the authors. We trust that they will continue the work they have begun until they have made known to us the entire mycological flora of the western coast of the United States.

Prof. Lawson Tait, who has been making extensive researches on the structure of "Pitcher Plants," (including under this name *Sarracenia* and *Darlingtonia*) is writing an instructive series of articles on the subject for the *Midland Naturalist*, one of which occurs in the March number, just received.

Nature, March 11th, prints an abstract of a paper read by Dr. Siemens before the Royal Society, March 4th, on the influence produced by the electric light on vegetation. Dr. Siemen's experiments thus far are but preliminary to other and more precise ones that are soon to be undertaken, but their general result has shown that plants exposed to the sunlight only, or to the electric light only, thrive about equally ; while those exposed to sunlight first, and then to the electric light after sunset, surpass in vigor and rapidity of growth those submitted to solar light alone. These experiments are not only instructive in proving the sufficiency of electric light alone to produce chlorophyll in the leaves of plants, and in promoting growth, but they also go to prove the important fact that nightly repose is not absolutely necessary for the life of plants. It may, however, be argued from analogy, that such repose is not necessary, seeing that annual crops grow and ripen, and plants develop rich colors and aromas in a wonderfully short space of time in the northern regions of Sweden, Norway, and Finland, where the summer does not exceed two months, during which period the sun scarcely sets.

Science Gossip for March contains an article by J. Saunders, "On Alternate Dehiscence of Anthers." In his work on "Insects and Flowers," Sir J. Lubbock states that the five "polliniferous anthers of *Parnassia*," ripen not simultaneously but successively, and as each ripens it places itself right on top of the stigma, with its back to it, and the pollen is then discharged from the anthers on the side away from the stigma, so that it is scarcely possible for any to fall on it, and this is done by the five stamens in succession." Mr. Saunders, after careful observations made on upwards of two hundred blossoms, arrives at the conclusion that a portion of this description is scarcely correct. His own account of the phenomenon is as follows: When the corolla expands, the stamens are recumbent on the ovary and closely applied to it, forming a compact whorl on the top of the stigma. First one of these anthers is slightly elevated, and as the dehisence continues it is carried forward, describing an arc in its course, till the filament lies extended between the petals. The empty anther is suspended over the edge of the sepal, to which the stamen is opposite, and soon falls off. These movements are repeated by the stamens invariably in an inverse order, which may be expressed thus $\begin{smallmatrix} & 1 & \\ 3 & & 2 \\ 5 & & 4 \end{smallmatrix}$, and never in such a succession as would be represented by $\begin{smallmatrix} & 1 & \\ 2 & & 5 \\ 3 & & 4 \end{smallmatrix}$. Subsequent observations showed that this alternate ripening of anthers occurs also in *Menyanthes trifoliata.* In many instances, in plants whose stamens are bicyclic, and thus double the number of petals, the dehiscence of the outer whorl, or those opposite the sepals, occurs first, and afterwards of the inner cycle or those opposite the petals. In these instances the alternation is between the cycles of the stamens, and agrees with the sequence of their development. Examples of this are furnished by several species of *Stellaria, Saxifraga, Epilobium, and Lilium.* The other botanical articles in this number are "The Rose of Jericho," (*Saulcya,* not *Anastatica,*) by T. E. Amyot, "List of Local Floras of Britain," by B. Hobson, and "Plant Rambles in Wales," by G. C. Druce.

Grevillea for March, contains articles by the Editor, Mr. M. C. Cooke, on the Fungi of the Libert Herbarium, "On the sub-genus Coniophora," on "The Fungi of India," and on "Some New York Fungi,"—the latter including descriptions of several new species belonging to our City's flora. The other articles are by F. Kitton on "The Diatomaceae of Kerguelen's Land;" by Phillips and Plowright on "New and Rare British Fungi;" by the Rev. J. M. Crombie on "New British Lichens;" and by Dr. Quelet on "Some New Fungi from the Jura and Vosges."

In the *Botanical Gazette* for March, Dr. Gray writes on "The Genus Leavenworthia," and calls attention to the "Automatic Movement of the Frond of Asplenium Trichomanes;" Dr. Rothrock tells "How to make Permanent Botanical Objects for the Microscope;" Mr. C. H. Peck describes a number of "New Species of Fungi;" and Mr. G. E. Davenport contributes a note on "Pteris aquilina." Last, but not least, the Editor speaks in complimentary terms of the BULLETIN, for which we thank him.

The *Quarterly Journal of Microscopical Science* prints an article on the Pollen-bodies of the Angiosperms by F. Elfving, translated and condensed from the "Jenaische Zeitschrift." A much shorter abstract of this paper was given by Dr. E. P. Wright in "Nature" last summer, and may be still further condensed as follows: It is asserted in the more recent manuals of botany that Gymnosperms and Angiosperms are differentiated, one from the other, by certain striking peculiarities relating to their reproductive systems; one of these being that in the former the pollen-grains are multicellular, and that in the latter they are unicellular. This distinction now turns out to be untrue. Fred. Elfving, of Helsingfors, working in the physiological loboratory of Strasburger at Jena, has proved that the pollen-cell of wind-fertilized or self-fertilized Angiosperms is also compound; or, in other words, that each pollen-grain becomes divided into two cells, one of which plays the part of a vegetative cell merely, and the other one takes upon itself the growth and functions of the pollen tube. Of these cells, the "vegetative" one is the smaller, and by a further division becomes developed into a two—or often a three—celled thallome. The vegetative cell, or cells, are only separated from the larger cell by a wall of cortical plasm, which, in particular instances, can become formed into a firmer membrane. Elfving does not seem to have studied the pollen of cleistogamous flowers, which, as suggested by Dr. Wright, might reveal some interesting facts.